Vol. X, Part 1.

Nos. 1-45

HELMINTHOLOGICAL ABSTRACTS

incorporating

BIBLIOGRAPHY OF HELMINTHOLOGY

For the Year 1941.

IMPERIAL BUREAU OF AGRICULTURAL PARASITOLOGY
(HELMINTHOLOGY)

Winches Farm Drive, Hatfield Road,
St. Albans, England.

HELMINTHOLOGICAL ABSTRACTS

INCORPORATING BIBLIOGRAPHY OF HELMINTHOLOGY
FOR THE YEAR 1941.
Vol. X, Part 1.

1—Agricultural Gazette of New South Wales.

a. ANON, 1941.—"Eel-worm disease of phlox." **52** (1), p. 40.

(1a) Stem disease of perennial, herbaceous Phlox plants, caused by *Anguillulina dipsaci*, is reported for the first time from New South Wales. A short account is given of the chief symptoms and, as control measures, the burning of affected plants and propagation by root cuttings are recommended. A number of plants susceptible to this strain of the parasite are listed. T.G.

2—American Journal of Hygiene. Section D. Helminthology.

a. BURLINGAME, P. L. & CHANDLER, A. C., 1941.—"Host-parasite relations of *Moniliformis dubius* (Acanthocephala) in albino rats, and the environmental nature of resistance to single and superimposed infections with this parasite." **33** (1), 1-21.

b. BROWN, H. W. & OTTO, G. F., 1941.—"Hemoglobin and reticulocyte studies on hookworm and malaria infected children." **33** (1), 22-31.

c. OTTO, G. F., HEWITT, R. & STRAHAN, D. E., 1941.—"A simplified zinc sulfate levitation method of fecal examination for protozoan cysts and hookworm eggs." **33** (1), 32-37.

(2a) Burlingame & Chandler suggest that rats do not develop resistance to a second infection with *Moniliformis dubius* in the true immunological sense. The worms can only establish themselves successfully in a very limited area of the intestine and the authors show that worms of a second infection take up exactly the same position as those of the first infection after these have been displaced or removed. Thus those hosts which show heavy initial infections also show heavy secondary infection after loss of the primary worms and they show no evidence of stunting. The worms seem to spend the first few weeks of their parasitic life far down in the intestine, then move forward to the final optimum position. Those which cannot find a footing in this favourable zone are soon passed out. Overcrowding due to a super-infection causes the backward migration of otherwise well-established worms to less favourable sites from which they soon pass out. Females tend to establish themselves in positions more forward than the males. P.A.C.

(2b) By using the Clayton Lane technique which is the most sensitive method of demonstrating light infections with hookworm the incidence of hookworm in North Carolina has been proved to be higher than recent surveys would suggest. The average haemoglobin level in parasitized and worm-free children was below normal. There was no evidence of a predisposition to malaria as a result of hookworm reticulocytosis. R.T.L.

(2c) The results of the examination of 100 faecal specimens by three different methods, namely, zinc sulphate (centrifuged) levitation, Willis'

brine levitation, and the simple smear, have been tabulated by Otto, Hewitt & Strahan. The specimens were all a week to a month or more old. The greatest efficiency was shown by the first method using zinc sulphate of specific gravity 1·18 only, whilst the Willis' brine levitation method, although the most efficient for concentrating hookworm ova, did not reveal any protozoal infections. Under conditions where a simplified technique is required zinc sulphate solution used as for the Willis levitation technique and without straining, washing or centrifugation, was shown to be reasonably efficient for concentrating both hookworm eggs and protozoan cysts. For finding protozoan trophozoites, however, the examination of a direct smear is always necessary. M.R.Y.

3—American Journal of Tropical Medicine.

a. GRAHAM, C. F., 1941.—" A device for the diagnosis of *Enterobius* infection." **21** (1), 159-161.

(3a) Graham describes the use of " Scotch cellulose tape " folded in a loop and held by forceps as a new method of trapping the eggs of *Enterobius vermicularis*. The adhesive surface of the cellulose is patted down on the perianal skin and then removed and placed on a microscope slide for examination. M.R.Y.

4—American Journal of Veterinary Research.

a. MOSKEY, H. E. & HARWOOD, P. D., 1941.—" Methods of evaluating the efficacy of anthelmintics." **2** (2), 55-59.

b. KOUTZ, F. R., 1941.—" A comparison of flotation solutions in the detection of parasite ova in feces." **2** (2), 95-100.

c. GUTHRIE, J. E. & HARWOOD, P. D., 1941.—" Use of tin preparations for the treatment of chickens experimentally infected with tapeworms." **2** (2), 108-116.

(4a) Concerned with legal aspects of the justification of claims published on behalf of proprietary anthelmintics, Moskey & Harwood discuss the general principles of tests of efficacy. Pointing out obvious flaws inevitable to *in vitro* tests, they briefly outline three *in vivo* tests: dilution egg counts, Hall's critical test (counting worms passed in faeces and those found post mortem), and the controlled test (counting worms post mortem in a batch of artificially infested animals, only part of which receives treatment). B.G.P.

(4b) Koutz publishes comparative data on egg-counts from dogs' faeces concentrated by simple gravity flotation (for 5 and 10 minutes respectively) and by Lane's direct centrifugal flotation, using the following solutions: $NaNO_3$ (specific gravity, 1·400), $ZuSO_4$ (1·380), $MgSO_4$ (1·285), NaCl (1·200), and sugar (1·275). The saturated $NaNO_3$ solution brings up most eggs, being especially effective with heavy eggs like *Trichuris vulpis* or operculated eggs like *Troglotrema salmincola*; the first 3 solutions, however, have the disadvantages of crushing thin-shelled eggs, floating a large amount of debris in addition to eggs, and (in the case of $NaNO_3$) producing numerous bubbles. Very thorough mixing is urged. B.G.P.

(4c) Following experiments using various tin compounds with chickens carrying cestodes, Guthrie & Harwood find that there is reason to believe that

certain tin compounds may have anthelmintic value. The pure substances were not particularly effective, but when mixed with a little synthetic pelletierine hydrochloride, tin oleate, stannous oxalate and stannous tartrate removed *Raillietina cesticillus*. The stannous tartrate mixture was 95% effective against *Hymenolepis carioca*, a worm which normally lives deeply embedded in the crypts of Lieberkuhn. The substances were not highly toxic and the authors suggest there is a wide margin of safety in their administration. P.A.C.

5—American Naturalist.

a. VAN CLEAVE, H. J., 1941.—"Relationships of the Acanthocephala." 75 (756), 31-47.

(5a) In a detailed discussion on the phylogenetic relationships of the Acanthocephala, Van Cleave stresses the numerous features pointing to a common ancestry shared by this group and the Cestoda. He concurs in regarding them as constituting a separate phylum which, however, should be placed adjacent to the Plathelminthes. An interesting suggestion homologizes the individual acanthocephalan with a single proglottis from a cestode with double genitalia: one cirrus remains as such whilst the other has become the acanthocephalan proboscis. B.G.P.

6—Annals of Applied Biology.

a. GADD, C. H. & LOOS, C. A., 1941.—"Observations on the life history of *Anguillulina pratensis*." 28 (1), 39-51.

b. BEAUMONT, A. & STANILAND, L. N., 1941.—"The spread of eelworm in commercial narcissus plantings." 28 (2), 135-141.

(6a) Gadd & Loos have made extensive studies on the life-history of *Anguillulina pratensis* which is a serious parasite of the roots of tea bushes in certain parts of Ceylon. Making use of seedlings of *Tephrosia Vogelii*, the roots of which are easily infected by the parasite, they show that the life cycle from egg to egg is completed in 45 to 48 days, divided up as follows: 15 to 17 days for eggs to hatch, 15 to 16 days for larval growth, and 15 days as adult before egg laying. Females, on an average, lay 1·6 eggs per day and continue to lay eggs for a maximum period of about 33 days. T.G.

(6b) Beaumont & Staniland present evidence that the bulb eelworm, *Anguillulina dipsaci*, is introduced into narcissus plantings by lightly infected bulbs which have not been hot-water treated or only inefficiently treated. The chief means of dispersal in the field is by surface water, spread being greatest in the direction of surface flow. Another important means of dispersal is by dried infected leaves which may be taken on to neighbouring plots by cross harrowing practised for the removal of weeds. They recommend the digging out of infected patches of bulbs and the construction of a surrounding trench to prevent further spread. Fields should not be planted again with bulbs until after a lapse of 3 years. T.G.

7—Archives of Surgery.

a. ARCE, J., 1941.—"Hydatid disease (hydatidosis). Pathology and treatment." 42 (1), 1-17.

8—British Journal of Radiology.

a. BRAILSFORD, J. F., 1941.—"*Cysticercus cellulosae*—its radiographic detection in the musculature and the central nervous system." 14 (159), 79-93.

9—British Journal of Surgery.

a. MANSON-BAHR, P. & WALTON, J., 1941.—"The surgical removal of *Fasciola hepatica* from the common bile-duct with a commentary upon this infection in man." 28 (111), 380-383.

10—British Medical Journal.

a. ANON, 1941.—"Trichiniasis in England now." [Annotation.] Year 1941, 1 (4179), p. 202.
b. LEE, J. E. S., 1941.—"An outbreak of trichiniasis in Wolverhampton and district. A clinical account of seven cases." Year 1941, 1 (4180), 237-240.
c. GARROD, L. P. & MacLEAN, D., 1941.—"Trichiniasis in Hertfordshire." Year 1941, 1 (4180), 240-241.
d. GILLAM, J. F. E., 1941.—"Trichiniasis in Britain." [Correspondence.] Year 1941, 1 (4182), p. 332.
e. BLYTH, W., 1941.—"Cysticercosis epilepsy." Year 1941, 1 (4184), 401-402.
f. SLADDEN, A. F., 1941.—"Trichiniasis in Britain." [Correspondence.] Year 1941, 1 (4184), p. 415.

(10b) Seven cases of acute trichinosis with atypical symptoms which were seen early in the Wolverhampton outbreak of 1940 are described. R.T.L.

(10c) The clinical notes of 5 cases of trichinosis which occurred at Harpenden in January 1941 are recorded. Several other suspected cases were seen but were not confirmed by laboratory methods. R.T.L.

(10d) Gillam, writing from Haverfordwest, records that an outbreak of trichinosis occurred in Pembrokeshire in November 1939. Eight cases were investigated. R.T.L.

(10e) In a clinical report on a case of cysticercous epilepsy contracted in India, Blyth suggests that it is after their death that the cysticerci produce symptoms by toxins and pressure whereas while they are alive there is considerable tolerance on the part of the host. R.T.L.

(10f) Sladden briefly records 5 cases of trichinosis which occurred in a household near Swansea in 1930. Four were acutely affected and in one the symptoms were very mild. A ham purchased locally but originating from the Midlands was suspected. R.T.L.

11—Canadian Journal of Comparative Medicine.

a. WICKWARE, A. B., 1941.—"Notes on miscellaneous diseases of geese." 5 (1), 21-24.

(11a) Wickware records the presence of *Amidostomum anseris* and *Echinuria parva* in the proventriculus and gizzard of the Canada goose, *Branta canadensis*, the presence of which has caused the death of several goslings in Ontario. He points out that these helminths, occurring as they do in migratory birds, would be dangerous to both wild and domestic geese. He has also found microfilariae in the blood of another gosling and suggests that *Simulium venustum* may be the carrier. P.A.C.

12—Canadian Journal of Research. Section B. Chemical Sciences.

a. COLLIER, H. B., 1941.—"A trypsin-inhibiting fraction of Ascaris." **19** (4), 91-98.

(12a) Collier found that crude saline extracts of *Ascaris lumbricoides* inhibited pepsin and trypsin but not papain. The extract showed no proteolytic activity (the strong proteolytic activity found by other workers is attributed to peptidases). A trypsin inhibitor, not precipitated by trichloracetic acid, unaffected by boiling and having properties of a polypeptide was concentrated from the crude extract by fractional precipitation. This inhibitor acted on trypsin immediately, a reversible combination probably taking place. Maximum inhibition took place at neutral or acid reactions with minimum effects at *p*H 5. The inhibitor stimulated peptic digestion but had no effect on papain. W.P.R.

13—Canadian Journal of Research. Section D. Zoological Sciences.

a. MILLER, M. J., 1941.—"A critical study of Stafford's report on 'Trematodes of Canadian fishes' based on his trematode collection." **19** (1), 28-52.

(13a) Several of Stafford's species are redescribed. Some are regarded as synonyms. R.T.L.

14—Cornell Veterinarian.

a. BRITTON, J. W., 1941.—"The materia medica of phenothiazine." **31** (1), 1-12.

b. BAKER, D. W., 1941.—"Yeast as an adjunct to the anthelmintic treatment of advanced cases of trichostrongylosis in calves." **31** (1), 13-16.

c. BAKER, D. W., 1941.—"The parasitic hazards encountered in southern and western raised calves and lambs in New York." **31** (1), 42-44.

d. GREEN, H. R., 1941.—"A practitioner's experience in the diagnosis and control of parasitic gastro-enteritis in imported steers." **31** (1), 44-46.

e. BAKER, D. W., 1941.—"Physaloptera in New York State dogs." **31** (1), 80-83.

f. BRITTON, J. W., 1941.—"Phenothiazine therapy in draft horses." **31** (1), p. 85.

(14a) Britton briefly summarizes the chemistry, pharmacology, methods of administration, anthelmintic action, and toxicology of phenothiazine, giving 50 references. B.G.P.

(14b) Baker records the clinical history of 2 calves from a group showing symptoms of anorexia, emaciation and general debilitation. These 2 calves were in an advanced stage of the disease, which was considered due principally to trichostrongylid worms and probably to lack of Vitamins B and G in the food. Dried yeast in a feed of ½lb. was given to the calves twice a day: they relished the taste and on the 4th day the ration was partly replaced by concentrates. This feeding overcame the anorexia and as long as yeast was included in the ration the appetite was maintained. On the 16th day they were strong enough to withstand treatment with 30 c.c. of a 50-50 mixture of tetrachlorethylene and mineral oil after oral swabbing with 5% $CuSO_4$, and repeated 9 days later. Yeast was discontinued after 7 weeks, by which time the calves were in a very much improved condition. J.W.G.L.

(14c) Baker shows that whereas lambs shipped to New York from the Rocky Mountain States are comparatively free from trichostrongyles, shipments from the southwest vary greatly in the degree of parasitism. An incidence is recorded where 300 lambs from Orleans County were received in good condition, but a similar consignment the following week consisted of very heavily parasitized lambs. J.W.G.L.

(14e) Baker records the presence of *Physaloptera* sp. in the stomachs of two mongrel dogs from the neighbourhood of Ithaca. He was not able to assign a definite species as none of the specimens were mature, but he was able to say that they were not *P. canis*. This is the third report of parasitism with *Physaloptera* in dogs of New York State which suggests that the genus is a rare parasite there. P.A.C.

(14f) Britton reports good results from dosing 44 pure-bred Percheron and Belgian draught horses with 60 g. phenothiazine fed with the grain at noon. There were mares, geldings, colts and 2 stallions, varying in weight from 1,200 lb. to 2,200 lb. The average strongyle egg-count, based on bi-weekly counts over several months before treatment, was 2,400 eggs per g., and this fell to nil except in two mares. There was no effect on ascarids. B.G.P.

15—Farming in South Africa.

a. MÖNNIG, H. O., 1941.—"The Ascaris worm of pigs." **16** (179), 71, 76.

16—Indian Journal of Medical Research.

a. GREVAL, S. D. S., CHANDRA, S. N. & DAS, B. C., 1941.—"Complement-fixation in hydatid disease: suggestions." **29** (1), 203-207.

b. RAO, S. S. & SUKHATME, P. V., 1941.—"Seasonal variations in the incidence of filarial lymphangitis." **29** (1), 209-223.

(16a) The writers collect fluid from hydatid cysts, phenolize them and test them separately for anti-complementary and haemolytic activity and then pool the best sera, using at least 6 to produce a standard antigen. This will remain active for at least a year when kept cold. They suggest that hydatid antigen may be used for the serological detection of *Cysticercus cellulosae* in man as the reaction is probably a group one. P.A.C.

17—Indian Medical Gazette.

a. NAPIER, L. E., DAS GUPTA, C. R. & MAJUMDAR, D. N., 1941.—"The treatment of hookworm anaemia." **76** (1), 1-11.

b. KHANNA, M. N., 1941.—"Hydatid cyst in the transverse mesocolon." **76** (2), 91-92.

c. NAPIER, L. E., 1941.—"Hookworm infection." [Editorial.] **76** (3), 161-164.

(17a) From a detailed consideration of 36 cases of hookworm anaemia it is concluded that without iron anthelmintics are of little immediate value. With iron alone, anaemic patients regain the normal haemoglobin level which is not maintained unless the hookworms are then removed. R.T.L.

18—Indian Veterinary Journal.

a. PILLAI, M. V., 1941.—"Treatment of heart worms with antimosan—observations on the treatment of two cases." **17** (5), 289-291.

b. RAHIM-UD-DIN, M., 1941.—" Coenurosis." 17 (5), 299-300.
c. RAHIM-UD-DIN, M., 1941.—" Guinea worm in a dog." 17 (5), p. 300.
d. AYYAR, T. S. V., 1941.—" Tape worm vomition in a dog." 17 (5), p. 302.

(18b) Coenurus cysts were evacuated by incision from the eyeball and from the muscles at the base of the ear in a ram. R.T.L.

(18c) A guinea-worm was removed from an abscess in the left fetlock of a dog at Adoni. R.T.L.

19—Journal of the American Veterinary Medical Association.

a. REBRASSIER, R. E., 1941.—" Gastrointestinal parasites of sheep and their control." 98 (767), 124-128.

(19a) Rebrassier considers that sheep gastro-intestinal parasites cannot be controlled by any one of the usual methods alone, but that a combination of two or more is necessary. An endeavour is made to show the benefit from treatment with copper sulphate, nicotine sulphate, tetrachlorethylene, and sodium arsenite, in various combinations, at three-week intervals during the grazing season. The winter carry-over of infection was largely eliminated by regular dosing with 5 c.c. tetrachlorethylene. J.W.G.L.

20—Journal of the Marine Biological Association of the United Kingdom.

a. LYSAGHT, A. M., 1941.—" The biology and trematode parasites of the gastropod *Littorina neritoides* (L.) on the Plymouth Breakwater." 25 (1), 41-67.
b. ROTHSCHILD, M., 1941.—" The effect of trematode parasites on the growth of *Littorinc neritoides* (L.)." 25 (1), 69-80.

(20b) The distribution of (i) parthenitae (using the snail as first intermediate host), and (ii) metacercariae (using the snail as second intermediate host only) in populations of *L. neritoides* are compared. Different curves are obtained, and it is thought that a possible explanation may be found in growth acceleration in the host, promoted by the action of the sporocysts and cercariae. M.R.

21—Journal of Parasitology.

a. MADSEN, H., 1941.—" The occurrence of helminths and coccidia in partridges and pheasants in Denmark." 27 (1), 29-34.
b. BEAVER, P. C., 1941.—" Studies on the life history of *Euparyphium melis* (Trematoda : Echinostomidae)." 27 (1), 35-44.
c. McCOY, O. R., DOWNING, V. F. & VAN VOORHIS, S. N., 1941.—" The penetration of radioactive phosphorus into encysted *Trichinella* larvae " 27 (1), 53-58.
d. WALTON, A. C., 1941.—" Amphibian nematodes from the Gaspé Peninsula and vicinity." 27 (1), 59-61.
e. YOUNG, M. D. & HAM, C., 1941.—" The incidence of intestinal parasites in a selected group at a mental hospital." 27 (1), 71-74.
f. WHARTON, G. W., 1941.—" The function of respiratory pigments of certain turtle parasites." 27 (1), 81-87.
g. REARDON, L. V., 1941.—" Incidence of *Endamoeba histolytica* and intestinal nematodes in a Georgia state institution." 27 (1), 89-90.
h. MALDONADO, J. F. & HOFFMAN, W. A., 1941.—" *Tamerlanea bragai*, a parasite of pigeons in Puerto Rico." 27 (1), p. 91.

i. HUSSEY, K. L., 1941.—" Partial twinning in a stylet cercaria." **27** (1), 92-93.
j. JANER, J. L., 1941.—" Miracidial twinning in *Schistosoma mansoni*." **27** (1), p. 93.
k. LEIGH, W. H., 1941.—" Variation in a new species of cestode, *Raillietina* (*Skrjabinia*) *variabila*, from the prairie chicken in Illinois." **27** (2), 97-106.
l. LEVIN, A. J., 1941.—" Recovery of *Trichinella spiralis* larvae in early stages of infection." **27** (2), 107-113.
m. FAUST, E. C., THOMAS, E. P. & JONES, J., 1941.—" Discovery of human heartworm infection in New Orleans." **27** (2), 115-122.
n. CORT, W. W., OLIVIER, L. & McMULLEN, D. B., 1941.—" Larval trematode infection in juveniles and adults of *Physa parkeri* Currier." **27** (2), 123-141.
o. DeEDS, F. & THOMAS, J. O., 1941.—" Studies on phenothiazine. IX. The biliary excretion and anthelmintic action of thionol." **27** (2), 143-151.
p. RODGERS, L. O., 1941.—" *Diplorchis scaphiopi*, a new polystomatid monogenean fluke from the spadefoot toad." **27** (2), 153-157.
q. MIZELLE, J. D., 1941.—" Studies on monogenetic trematodes. IV. *Anchoradiscus*, a new dactylogyrid genus from the bluegill and the stumpknocker sunfish." **27** (2), 159-163.
r. CHEATUM, E. L., 1941.—" *Dendritobilharzia anatinarum* n. sp., a blood fluke from the mallard." **27** (2), 165-170.
s. HILL, W. C., 1941.—" *Gryporhynchus tetrorchis*, a new dilepidid cestode from the great blue heron." **27** (2), 171-174.
t. CHANDLER, A. C., 1941.—" Helminths of muskrats in southeast Texas." **27** (2), 175-181.
u. CHANDLER, A. C., 1941.—" Two new trematodes from the bonito, *Sarda sarda*, in the Gulf of Mexico." **27** (2), 183-184.
v. CHANDLER, A. C., 1941.—" A new spiruroid nematode, *Habronema americanum*, from the broad-winged hawk, *Buteo platypterus*." **27** (2), 184-185.
w. CUCKLER, A. C. & PENNER, L. R., 1941.—" *Cercaria elongata* Brackett, 1940, from a new snail host, *Menetus exacuous* (Say), in Minnesota." **27** (2), p. 187.

(21a) In an examination of *Perdix perdix* and *Phasianus colchicus* in Denmark, Madsen has recovered 12 species of helminths. *Echinostoma revolutum* and *Capillaria collaris* are reported for the first time from pheasants, and *Capillaria columbae* for the first time from partridges. *Dispharynx spiralis* in the partridge seems to be a new European record. There are some interesting ecological notes and some remarks on the correlation of host age with infection. P.A.C.

(21b) Adult echinostomes, probably identical with *Euparyphium melis*, were obtained experimentally by feeding to a ferret encysted cercariae obtained from tadpoles which had been infected with cercariae from *Stagnicola emarginata angulata* collected at Douglas Lake, Michigan. Detailed descriptions of the redia, cercaria, metacercaria and adult are given, and the differential diagnosis of *E. melis* is discussed. R.T.L.

(21c) McCoy et al. found that radioactive phosphorus fed (as basic sodium phosphate) to 28 rats infected from 8 to 10 months previously with *Trichinella spiralis* could be detected in the larvae 2 hours after feeding. Maximal amounts (estimations were made using a Geiger-Müller counter) were found in larvae from rats killed 4 days after feeding. The absorption and loss of radioactive phosphorus was more rapid in the hosts' muscles than in

the larvae. As a result of these experiments the authors claim that an exchange of phosphate ions may take place through cyst walls surrounding *T. spiralis* larvae and consider that the larvae may be undergoing active metabolism during the encysted stage. W.P.R

(21d) Among a number of species of nematodes found in *Rana pipiens*, *R. clamitans*, *R. palustris* and *Bufo americanus*, Walton describes *Spironoura rankini* n. sp. from the intestine of *R. clamitans*, based on male material only. B.G.P.

(21e) Of 142 mental patients 117 or 82% were infected with helminths, and 92 or 65% with protozoa. The helminths present were *Strongyloides stercoralis* 39%, hookworm 66%, *Trichuris trichiura* 78%, and *Ascaris lumbricoides* 10%. Except for Ascaris the incidence of these and *Balantidium coli* appeared to increase with length of residence in the hospital. This shows that when conditions of soil and climate are favourable any break in personal hygiene completes the cycle of transmission and leads to a wide dissemination. M.R.Y.

(21f) Wharton has examined extracts from certain turtle parasites spectroscopically. Haemoglobin was found to be present in *Telorchis robustus*, *Allassostoma magnum* and *Camallanus trispinosus* but was absent in *Falcaustra affine* and *Cruzia testudinis*. Cytochrome was present in *A. magnum* and *C. trispinosus*. The oxygen dissociation curve of *C. trispinosus* haemoglobin (determined by Hall's method) was found to differ from that of the host haemoglobin in that oxyhaemoglobin was formed at much lower oxygen tensions. It is suggested that the high affinity of *Camallanus* haemoglobin for oxygen might result in the transfer of oxygen from host blood to the parasite haemoglobin whereon cytochrome acts as a transport to the oxidizable substrate. W.P.R.

(21g) In 1938 Reardon examined 3 groups of white adult females in an institution in Milledgeville, Georgia. Two groups (of 72 and 70 patients respectively) showed the following infections: *Endamoeba histolytica* 40% and 44%, *Ascaris lumbricoides* 14% and 9%, *Necator americanus* 33% and 30%, *Trichuris trichiura* 65% and 61%, *Strongyloides stercoralis* 6% and 6%, and *Enterobius vermicularis* 53% and 69%. The 3rd group of 88 were examined for *Enterobius vermicularis* only and showed an incidence of 27%. M.R.Y.

(21h) Maldonado & Hoffman have recovered *Tamerlanea bragai* from pigeons in Puerto Rico. While this parasite is well known in South America, this is the first record in Puerto Rico and there are no known intermediate distributional records. The parasite was restricted to the kidney and urethra where the effects are chiefly mechanical. There is a slight round cell infiltration, however, and some muscular hypertrophy of the walls. P.A.C.

(21k) Leigh describes *Raillietina variabila* n. sp. from the small intestine of *Tympanuchus americanus* in Illinois. It can be admitted to the subgenus *Skrjabinia* and can be differentiated from other species by the possession of only 33 to 82 testes, and of a large number of rostellar hooks numbering from 240 to 272. One interesting observation was the high proportion of abnormalities in form and structure: most variations have occurred in the size of the strobila, number and size of testes, and the size and extent of the cirrus pouch. P.A.C.

(21 l) Levin describes a method by means of which young larvae of *Trichinella spiralis* can be recovered from muscle tissue. He macerates the meat and separates the larvae by mechanical, not chemical, means. He found the first larvae free in the intestine after 6 days whence they migrate rapidly to the muscles. After mincing the meat finely, it was allowed to macerate in saline and filtered through cheesecloth and a 60-mesh screen. Centrifuging concentrates the larvae. P.A.C.

(21m) A single male *Dirofilaria* obtained from the heart of an aged negress, who had been a life-long resident in New Orleans, is described and named *D. louisianensis* n. sp. Referring to the previous case recorded by Magalhães, the authors state that " the present morphological criteria for species differentiation of filarioid worms require that the specimens obtained from the two human subjects be regarded as distinct from *D. immitis*, *D. indica* and *D. pongoi* as well as from one another". R.T.L.

(21n) Six species of larval trematodes were found in *Physa parkeri* from Douglas Lake. The seasonal invasion by the various cercarial species is noted. The very high incidence of the cercariae of *Echinostoma recurvatum* is attributed to the abundance of muskrats. These cercariae apparently killed large numbers of the young snails. R.T.L.

(21 o) Phenothiazine given orally is excreted by the bile as phenothiazine, thionol and leucothionol. Phenothiazine *in vitro* has no demonstrable action on *Ascaris lumbricoides* from the pig. Thionol has a stimulant, followed by a depressant effect which is facilitated by bile. R.T.L.

(21q) Mizelle describes *Anchoradiscus anchoradiscus* n. g., n. sp. from the gills of *Eupomotis microlophus* and *Lepomis macrochirus* in Florida. It can be distinguished by the facts that the anchors have recurved points projecting laterally and bars lying ventral to them and attached at the lower lateral surfaces. The hooks have large ovate bases and the anchor shafts are much reduced. The anchor bases are enormously developed and occupy most of the frontal plane of the haptor. P.A.C.

(21r) A blood fluke from the mallard duck named *Dendritobilharzia anatinarum* n. sp. differs from the two other known species of the genus in possessing a long uterus with many eggs, and in the male being smaller than the female. A modification of the generic diagnosis is suggested. There is some evidence that this blood fluke causes fatal pathological lesions in the ducks. R.T.L.

(21s) Hill describes *Gryporhynchus tetrorchis* n. sp. a cestode parasite of *Ardea herodias herodias* in Oklahoma. This is the first record of this genus in the western hemisphere. It can be distinguished from related species by the possession of 4 testes, a short cirrus sac, and a U-shaped gravid uterus. P.A.C.

(21t) From 36 Texas muskrats, Chandler records 3 species of trematodes including *Phagicola lageniformis* n. sp., and 4 species of nematodes including *Rictularia ondatrae* n. sp. and *Strongyloides ratti* var. nov. *ondatrae*. For *Litomosoides carinii* (Travassos, 1919) the muskrat is a new host. R.T.L.

(21u) The gasterostome *Rhipidocotyle angusticolle* n. sp. and the hemiurid *Sterrhurus texanus* n. sp. are described from *Sarda sarda*. R.T.L.

(21v) *Habronema americanum* n. sp. from the stomach of *Buteo platypterus* in Texas differs chiefly from *H. leptoptera* in the shape of the lips. R.T.L.

22—Journal of the Royal Army Medical Corps.

a. SHAW, G. W. B. & CLYNE, A. J., 1941.—"A case of infection with *Fasciola hepatica*." **76** (3), 173-174.

(22a) Shaw & Clyne report a case of a single *Fasciola hepatica* found in a freely movable, subcutaneous nodule located over the 7th rib of a woman in India. There were no faecal ova, no eosinophilia, a negative Kahn reaction, and a positive blood Wassermann—probably due to the fluke infestation. B.G.P.

23—Journal of the Royal Army Veterinary Corps.

a. KNOWLES, R. H. & BLOUNT, W. P., 1941.—"Experimental observations on phenothiazine relative to the treatment of equine strongylosis." **12** (2), 51-65.

b. TAYLOR, E. L., 1941.—"A note on phenothiazine." **12** (2), 66-68.

c. BLOUNT, W. P., 1941.—"Observations on the modified Gordon-Whitlock method for the counting of helminth ova in horse faeces." **12** (2), 69-78.

(23a) Knowles & Blount give details of the treatment of some 40 horses with 30 g. phenothiazine given in food after a short fast. The drug was non-toxic and 100% efficient against strongyles. The egg-count, after a preliminary rise, fell rapidly until the third or fourth day when it became negative and remained so for about 5 weeks. Worms were passed out from about the 30th hour after treatment, reached a peak by the 41st hour and were all expelled by the 4th day. It is suggested that horses with over 1,000 strongyle eggs per g. of faeces should be treated with phenothiazine. Observations are given on the chemistry of commercial phenothiazine, including its solubility in various common solvents. The possible mode of action of the drug is discussed. Experimental work on poultry showed that 0·64 g. was the minimum effective dose for the expulsion of *Heterakis gallinae*. J.W.G.L.

(23b) Taylor briefly describes the pharmacological history, structure, and properties of phenothiazine. B.G.P.

(23c) Blount describes the Gordon-Whitlock ("McMaster") egg-counting technique, and in particular the construction of the counting cell. He gives data on a number of technical points and suggests the use of a larger counting cell to reduce variation. If faeces are to be posted, eggs may be preserved and prevented from hatching by adding to the faeces dry phenothiazine or 20% "Mefarol". B.G.P.

24—Journal of Tropical Medicine and Hygiene.

a. CAWSTON, F. G., 1941.—"A consideration of the resistance of molluscs and mammals to the attacks of larval trematodes." **44** (2), p. 8.

25—Journal of Urology.

a. DE SAVITSCH, E., 1941.—"Surgical treatment of elephantiasis of the scrotum and penis." **45** (2), 216-222.

26—Journal of the Washington Academy of Sciences.

a. LUCKER, J. T., 1941.—" *Contracaecum quincuspis*, a new species of nematode from the American waterturkey." **31** (1), 33-37.

(26a) *Contracaecum quincuspis* n. sp. from *Anhinga anhinga* possesses lips and interlabia of very complex and striking appearance. Each lip has a pair of wing-like lateral processes situated near the base and another pair near the lip. There are also 2 deep incisions laterally, extending nearly to the middle of the lip. Each interlabia has 2 pairs of wing-like expansions which fit into the deep incision of the lips. This complexity of structure is also met with in *C. tricuspis* but there are distinct differences which are clearly pointed out by Lucker. No other species of this genus possesses such structures. P.A.C.

27—Lancet.

a. SHELDON, J. H., 1941.—" An outbreak of trichiniasis in Wolverhampton and district." Year 1941, **1** (6129), 203-205.

(27a) A preliminary account is given of the clinical course of trichinosis as seen in 76 cases which occurred in the Wolverhampton outbreak of December 1940. 62 out of the 76 cases were females, 2 were children. The sex incidence is attributed to the habitual custom among the women of eating raw sausages as a sandwich spread or during their preparation for cooking. R.T.L.

28—Leaflet. United States Department of Agriculture.

a. WEHR, E. E., 1941.—" Controlling gapeworms in poultry." No. 207, 6 pp.

29—New England Journal of Medicine.

a. WELLER, T. H. & SORENSON, C. W., 1941.—" Enterobiasis: its incidence and symptomatology in a group of 505 children." **224** (4), 143-146.

b. DAMMIN, G. J., 1941.—" Trichinosis. Report of a case, with demonstration of the larva in the arterial blood." **224** (9), 357-360.

(29a) Of a series of 505 children in Boston, 415 were examined by one NIH swab showing 74 or 18% positive for *Enterobius vermicularis* and 90 were examined by 2 swabs showing 23 or 26% positive. A significant difference in incidence of infection was found among the girls and boys, 23% of 257 girls and 15% of 248 boys being infected. Thirteen per cent. of the 2 to 4 year group and 23% of the 5 to 9 year group were positive. Significant differences were also found between the total family size (5·5 : 4·6) and between the number of children under 14 years of age (3·1 : 2·2) of positive and negative cases. A study of the symptomatology showed that a large proportion of the cases seen in this group were essentially asymptomatic. M.R.Y.

(29b) Dammin considers that the examination of the arterial blood in this case provided a simple and rapid method for the early diagnosis of Trichinella infection. The migrating larvae measured 115μ by 5μ. Unusual features were the relatively late occurrence of a delayed positive skin reaction followed by 2 negative reactions. The initial symptoms, low frontal headache, swelling of the eyelids and redness and burning of the eyes, appeared 16 days after eating imported smoked ham. R.T.L.

30—New Zealand Journal of Agriculture.

a. ANON, 1941.—"Internal parasites in poultry." **62** (1), 50-52, 60.

31—North American Veterinarian.

a. GUTHRIE, J. E., POWICK, W. C. & BANDEL, D., 1941.—"Critical tests with tetra-alkyl tin compounds for the removal of *Raillietina cesticillus* from experimentally infected chickens." **22** (1), 22-24.

b. HATCHER, W. L., 1941.—"Phenothiazine poisoning in horses." **22** (3), 159-160.

(31a) Guthrie, Powick & Bandel have investigated the use of certain compounds of tin as poultry vermifuges against *Raillietina cesticillus*. They find that tetra-iso-butyl tin when used in conjunction with pelletierine hydrochloride is effective in removing cestodes. They suggest that while such tin compounds do not normally ionize, they may do so in the conditions found in the gut, and consequently may react with the pelletierine hydrochloride very much as do tin salts or soaps. P.A.C.

(31b) In view of the publicity which has been given phenothiazine in the lay press and the emphasis which has been placed on the harmlessness of the drug, Hatcher gives an account of the death of several race horses which at the time of treatment with phenothiazine were in fine condition. R.T.L.

32—Nursing Mirror and Midwives' Journal.

a. FARROW, B. M., 1941.—"Case history of trichinosis." **72** (1877), p. 506.

b. GODDARD, L., 1941.—"Trichinosis, its causes and treatment." **72** (1877), 506, 508.

(32a & b) This brief lay account of the symptoms, cause and treatment of trichinosis is accompanied by a case history of a member of the nursing profession. The locality in which this alleged case occurred is not mentioned. R.T.L.

33—Parasitology.

a. CROFTON, H. D., 1941.—"A record of trematode parasites from *Mola mola* and *Raniceps raninus* (Linn.)." **33** (2), 209-210.

b. PANIKKAR, N. K. & SPROSTON, N. G., 1941.—"Osmotic relations of some metazoan parasites." **33** (2), 214-223.

(33b) Panikkar & Sproston immersed *Angusticaecum* sp. in fluids of various concentrations and then determined the osmotic relationships between the media and the worms' body fluids, using Baldes' modification of the Hill thermoelectric technique. It was found that the worms were hypertonic in 1·1 to 1·3% sodium chloride in tap water but became isotonic in sea water and were slightly hypertonic in 50% sea water. Ligaturing experiments showed that the passage of water and probably salts also took place through the cuticle. Similar experiments were carried out with *Lernaeocera branchialis* (a blood-feeding copepod) and *Bopyrus squillarum* (a blood-sucking isopod). W.P.R.

34—Practitioner.

a. MANSON-BAHR, P., 1941.—"Modern therapeutics. XXII. The modern treatment of intestinal parasites." **146** (874), 271-278.

35—Proceedings of the Biological Society of Washington.

a. STEINER, G., 1941.—"Nematodes parasitic on and associated with roots of marigolds (*Tagetes* hybrids)." **54**, 31-34.

(35a) Steiner lists 19 ornamentals grown in a flower border at Washington, D.C., the roots of which were galled by *Heterodera marioni* in 1933. In the same border in 1937 some 40 horticultural varieties of marigolds (*Tagetes* spp.) were grown and it was found that although large numbers of *H. marioni* larvae entered the roots they mostly failed to reach sexual maturity with the production of eggs. *Criconemoides mutabile* was found feeding ectoparasitically on the roots of marigolds both in 1933 and 1937. Technical illustrated descriptions are given of 2 new nematodes found associated with marigold roots, namely, *Paraphelenchus micoletzkyi* n. sp. and *Aphelenchoides tagetae* n. sp. T.G.

36—Proceedings of the Helminthological Society of Washington.

a. SPINDLER, L. A., CROSS, S. X. & AVERY, J. L., 1941.—"Results of intracutaneous tests for the detection of trichina infections in swine." 8 (1), 1-5.

b. AVERY, J. L., 1941.—"A simple method of removing bacteria that adhere to trichina larvae." 8 (1), 6-7.

c. JONES, M. F., 1941.—"Studies on oxyuriasis. XXV. Necropsy examinations for *Enterobius vermicularis* in 72 children at Washington, D.C." 8 (1), 7-10.

d. BRADY, F. J., 1941.—"The incidence of oxyuriasis in two institutions in Puerto Rico." 8 (1), p. 10.

e. LUCKER, J. T., 1941.—"Notes on the survival of infective horse strongyle larvae." 8 (1), 11-13.

f. MUELLER, J. F., 1941.—"Some parasites newly recorded for the ruffed grouse, *Bonasa umbellus*, in the United States." 8 (1), 14-15.

g. WALTON, A. C., 1941.—"Distribution of the genus *Thelandros* (Nematoda : Oxyuroidea)." 8 (1), 15-18.

h. WALTON, A. C., 1941.—"The finer structure of *Aplectana hamatospicula* (Nematoda)." 8 (1), 18-21.

i. ALLEN, M. W., 1941.—"*Aphelenchoides megadorus*, a new species of Tylenchoidea (Nematoda)." 8 (1), 21-23.

j. CHRISTIE, J. R. & COBB, G. S., 1941.—"Notes on the life history of the root-knot nematode, *Heterodera marioni*." 8 (1), 23-26.

k. McBETH, C. W., TAYLOR, A. L. & SMITH, A. L., 1941.—"Note on staining nematodes in root tissues." 8 (1), p. 26.

l. TAYLOR, A. L. & McBETH, C. W., 1941.—"A practical method of using methyl bromide as a nematocide in the field." 8 (1), 26-28.

m. MORGAN, B. B., 1941.—"A summary of the Physalopterinae (Nematoda) of North America." 8 (1), 28-30.

(36a) Spindler, Cross & Avery report on over 12,000 skin tests on 1,512 swine, using saline extracts of dried *Trichinella* larvae as antigen. They give details of the preparation of the most promising antigen ; they obtained positive reactions in 73·25% of pigs, later shown to be infected. However, in a group of uninfected pigs, 21·04% also gave positive reactions. P.A.C.

(36b) Avery describes a sand filter by means of which he can obtain *Trichinella* larvae from digested meat, free from all bacteria. The larvae pass from the fluid, through the sand into sterile Ringer's solution, partly by gravitational forces and partly by the activity of the larvae, and in so doing rid themselves of adhering bacteria. P.A.C.

(36c) Jones made necropsy examinations of intestines from 72 children, ranging from 0 to 14 years of age, to observe the location of *Enterobius vermicularis* and to recover young developing worms for study. Ten out of 24 white children and 11 out of 48 negro children were infected, pinworms being found in 21 or 28% of the intestines. In three cases only were there more than 50 worms. Pinworms were twice as frequent in the large intestine as in the small intestine and on no occasion were they found in the small intestine without being in the large intestine. In 5 cases a positive finding was dependent on the examination of the appendix and the combined results show that the incidence in the appendix is a fairly reliable index of infection. M.R.Y.

(36d) Brady found a lower incidence of *Enterobius vermicularis* than expected in two institutions in Puerto Rico. Fifteen out of 50 girls, i.e. 30%, and 6 out of 52 boys, i.e. 12%, were shown to be positive when examined by 4 NIH swabs. The girls were in an old building with inadequate sanitation and large dormitories whilst the boys were in new buildings with good sanitation and small dormitories. The large amount of time the children spent out of doors and the constant high temperature (never below 62°F.) shortening the duration of the viability of the ova were thought to be the main factors responsible for the low incidence as compared with other children in institutions. M.R.Y.

(36e) From an experiment, in which the author admits that the method of sampling has obvious limitations, it is concluded that only a small proportion of infective horse strongyle larvae in faeces on coarse sand soil near Beltsville, Md., survived the summer season. The mortality was even higher when the faeces were buried. This supports the quantitative work of Taylor and suggests that in the warm season of the year the vitality of the bulk of the larvae is lost in a few months on unoccupied pastures. From laboratory experiments it is also concluded that horse strongyle larvae remain viable longer at mean temperatures of about $-5°$ and 3°C. than at 31°C. or at variable room temperatures with a mean of 26°C. Possibly this was attributable to the deleterious effect of inadequate aeration due to organic decomposition. R.T.L.

(36f) From the ruffed grouse, *Bonasa umbellus*, 3 trematode, 3 cestode, and 2 nematode species are recorded. All are known forms. R.T.L.

(36g) With one exception the species of *Thelandros* are confined to lizard and tortoise hosts. The distribution of the various species is tabulated under Africa, Asia, South America, North America and Australia. R.T.L.

(36h) A study of the cephalic and oesophageal structures of *Aplectana hamatospicula* substantiates the placing of the genus in the Ascaridoidea. Whether or no *Aplectana* is a synonym of *Oxysomatium* will depend on a restudy of *O. brevicaudatum*. R.T.L.

(36i) Allen gives an illustrated description of *Aphelenchoides megadorus* n. sp., which occurred close to the roots of shadscale (*Atriplex confertifolia*) growing in desert soil close to Lake Utah. Females only were found. The new species is remarkable for the very strong mouth spear having large basal swellings, the unusual spear guide and the heavily sclerotized head framework. T.G.

(36j) Christie & Cobb give details of the development of *Heterodera marioni* from egg to adult. The first moult occurs in the egg; the second stage larva hatches, enters the host root and there undergoes two moults in quick succession, followed by a third on becoming mature. The stylet in the adult female is very little longer than that of the preparasitic larva, but is about twice as long in the male; in both cases it is considerably thicker in the mature worm. M.T.F.

(36k) McBeth, Taylor & Smith give particulars of a modification of the method described by Goodey [see Helm. Abs., Vol. VI, No. 196b] for staining nematodes in root tissues with acid fuchsin or cotton blue in lactophenol. In the new technique the roots are first washed in water and then boiled for 1 minute in the stain, but the after treatment consists in clearing in lactophenol rather than in acidified alcohols. Permanent mounts are made by transferring direct from the pure lactophenol to glycerine. A weaker stain is also recommended as giving good results but this entails boiling in the stain for 2 minutes. T.G.

(36l) Taylor & McBeth describe the application of methyl bromide to a plot of sandy loam soil heavily infected with root-knot eelworm. The plot was 8×25 feet, was covered by a gas-proof cover of kraft paper and was at a temperature of 25°C. $1\frac{1}{2}$ lb. of methyl bromide, introduced at the centre of the plot, killed all nematodes to a depth of at least 1 foot. M.T.F.

(36m) Morgan recognises as valid 4 genera of Physalopterinae and lists with hosts 21 species recorded from North America. R.T.L.

37—Proceedings of the Society for Experimental Biology and Medicine.

a. HOEPPLI, R. 1941.—" Influence of splenectomy on susceptibility of mice to infection with *Taenia taeniaeformis* eggs." **46** (1), 29-31.

b. BRAND, T. VON, 1941.—" Aerobic fat metabolism of *Ascaris lumbricoides*." **46** (3), 417-418.

(37a) Splenectomy in mice significantly reduces their resistance to infestation with *Cysticercus fasciolaris*. A very few mice, however, seemed to have an individual resistance, abnormally high or low, which remained unaffected by the removal of the spleen. P.A.C.

(37b) Von Brand has estimated (Kumagava and Suto's method) the fat content of freshly collected female *Ascaris lumbricoides* (pig strain) and similar worms and their eggs which had been kept for 5 days in 1% saline under aerobic conditions. The fresh worms contained $1{\cdot}75 \pm 0{\cdot}07\%$ ether extract and the bodies of the starved worms contained $1{\cdot}67 \pm 0{\cdot}05\%$ (calculated on the basis of the weight of the worms at the beginning of the experiment) while the eggs contained $0{\cdot}05 \pm 0{\cdot}013\%$ of the weight of the worms. Since the sum of the ether extracts derived from the starved worms and their eggs corresponded closely to that in the fresh worms it is concluded that, during the starvation period, no fat was used for the production of energy, though the presence of a fat metabolism of some intensity was indicated by the fact that fat was excreted in the eggs. W.P.R.

38—Public Health. London.

a. JOLLY, R. H. H., 1941.—"Trichiniasis in the West Midlands." 54 (6), 88-91.

(38a) Jolly describes the administrative action taken by the public health authorities to limit the spread of the Wolverhampton outbreak of trichinosis in 1940. R.T.L.

39—South African Medical Journal.

a. GELFAND, M., 1941.—"A note on the clinical features of bilharzia salpingitis." 15 (4), 69-70.

b. DREOSTI, A. O., 1941.—"Hydatid cyst of the lung treated by lobectomy." 15 (4), p. 71.

40—Taiwan Igakkai Zassi.

a. RO, M., UTIHO, S., OKAMOTO, Y., KOZIMA, T. & YOKOGAWA, M., 1941.—"On the results of a parasitological examination of the miners of the Nankai coal mining company in Iriomote Islands, Yaeyama County, Okinawa Prefecture." 40 (1), 64-78. [In Japanese: English summary pp. 78-79.]

b. RO, M. & YOKOGAWA, S., 1941.—"Experimental treatment of paragonimiasis. Pathologic-anatomical observations of dogs harbouring lung flukes (*Paragonimus westermanii*) experimentally treated with prontosil in combination with emetine hydrochloride and, especially, histopathological changes in the foci of lungs and changes in the dying flukes." 40 (2), 268-304. [In Japanese: English summary pp. 304-307.]

41—Transactions of the American Microscopical Society.

a. HOPKINS, S. H., 1941.—"The excretory systems of *Helicometra* and *Cymbephallus* (Trematoda), with remarks on their relationships." 60 (1), 41-44.

b. OLIVIER, L., 1941.—"Three new species of strigeid cercariae from the Douglas Lake region, Michigan." 60 (1), 45-52.

c. WALTON, A. C., 1941.—"Notes on some helminths from California Amphibia." 60 (1), 53-57.

d. HILL, W. C., 1941.—"*Physaloptera terrapenis*, a new nematode from a tortoise." 60 (1), 59-64.

e. ARNOLD, jr., J. G., 1941.—"A new rabbit nematode, *Stunkardionema halla*." 60 (1), 65-68.

f. EDGAR, S. A., 1941.—"Use of bile salts for the evagination of tapeworm cysts." 60 (1), 121-128.

(41a) *Helicometra fasciata* and *Cymbephallus fimbriatus* have been found to have a flame cell formula like *Plagioporus* and *Coitocaecum*, 2[(2+2)+(2+2)], and Hopkins suggests that this and the occurrence of cotylocercous cercariae be primary criteria for the family OPECOELIDAE (the joining of the intestinal caeca and presence of an anus being of secondary significance), with which the following in addition to the foregoing genera have affinity rather than with the ALLOCREADIIDAE: *Podocotyloides*, *Enenterum*, *Dactylosomum*, *Genitocotyle*, *Nicolla*, *Ozakia*, *Opecoelus*, *Opegaster*, *Opecoeloides*, *Anisoporus* and *Opecoelina*. N.G.S.

(41b) *Cercaria sincera* n. sp. from *Valvata sincera*, *C. scudderi* n. sp. from *Stagnicola palustris elodes*, and *C. wallooni* n. sp. from *S. emarginata canadensis* are described and compared with related species. Including these, 22 species of strigeid cercariae have been described from the Douglas Lake region. N.G.S.

(41c) *Spironoura ranae* n. sp., which differs from *S. mackini* in the possession of a spike-like tail tip in the male, and 3 other nematodes are recorded from Californian Amphibia. A key based on male structures is given for 10 species of *Spironoura* in Amphibia. *S. cryptobranchi* and *S. gracile* are not included owing to lack of knowledge regarding the males. R.T.L.

(41e) A new species which is type of a new genus related to *Nematodirus* is made for a nematode from rabbits in Kansas and New York. It is named *Stunkardionema halla* n.g., n. sp. It differs from *Nematodirus* in bursal details, the presence of a gubernaculum, in the position of the vulva, and relations of the posterior end of the female. R.T.L.

(41f) The evagination of the heads of *Cysticercus pisiformis* and other tapeworm larvae is rapidly effected in concentrations of 1 grain of finely ground commercial bile salts in 10 c.c. of Ringer's solution warmed to 37°C. to 38°C. It may also be demonstrated at room temperature in Ringer's or physiological salt solutions containing 1 grain to 100 c.c. Re-invagination occurs occasionally in low concentrations of bile salts. R.T.L.

42—Transactions of the Royal Society of Tropical Medicine and Hygiene.

a. SENEKJI, H. A., 1941.—"Polysaccharide scolex antigen for the immunological diagnosis of hydatid disease." 34 (5), 401-403.

(42a) Senekji has successfully extracted a polysaccharide from the scolices of hydatid using N/4 trichloracetic acid. This fraction can be used in the Casoni test for the specific identification of hydatid. The results with the precipitin test are not so satisfactory. This antigen is useful because it can be prepared in large amounts, is potent and has good keeping qualities. Unlike hydatid fluid, its efficiency does not vary. P.A.C.

43—Tropical Agriculturist.

a. LOOS, C. A., 1941.—"Some diseases of garden plants." 96 (1), 22-27.

(43a) Loos gives short accounts of leaf blotch disease in the following garden plants in Ceylon: *Gerbera Jamesoni* Bolus, *Chrysanthemum Leucanthemum* L. (oxeye daisy), *Gomphrena globosa* L. (batchelor's button), *Salvia farinacea* Benth., and *Pentstemon barbatus* Roth., in all of which *Aphelenchoides olesistus* was found as a primary parasite. In a chrysanthemum plant affected by the parasitic fungus, *Septoria obesa*, the cephalobid nematode, *Panagrolaimus rigidus*, occurred as an associated saprophage. T.G.

44—Veterinary Medicine.

a. ERRINGTON, B. J., 1941.—"Phenothiazine as an equine anthelmintic." 36 (4), 188-193.

(44a) Errington discusses the literature on phenothiazine as an equine anthelmintic and reports on his own experience of the drug. Up to 90 g. were given and toxicity was frequently encountered with large doses; the symptoms were a reduction in the red blood cell count, icterus, haemoglobinuria, albuminuria, and a reduction in peristalsis. The efficiency of the drug

against strongyles is confirmed, but it is stressed that it is not non-toxic. It is suggested that a dose of 30 g. should not be exceeded. J.W.G.L.

45—Veterinary Record.

a. ROBERTSON, D., 1941.—" Field trials on the use of phenothiazine against worms in sheep." **53** (4), 47-49.
b. ROWLANDS, W. T. & HARBOUR, H. E., 1941.—" ' Pining ' in lambs on permanent pasture in N. Wales. An investigation into the cause of the condition." **53** (11), 153-156.
c. STEWART, W. L. & CROFTON, H. D., 1941.—" Parasitic gastritis in sheep. Comparative trials on lambs with phenothiazine and copper-nicotine mixture." **53** (12), 167-170.
d. BODDIE, G. F., CORNER, H. H., MORGAN, D. O. & SLOAN, J. E. N., 1941.—" Field trials with phenothiazine on lambs." **53** (12), 170-173.
e. BURNDRED, E. J., 1941.—" Trichina infection of meat." **53** (12), p. 174.
f. OTTAWAY, C. W. & BINGHAM, M. L., 1941.—" Some records of parasitic aneurysm in clinically affected horses." **53** (20), 275-282; (21), 295-297.

(45a) Robertson describes 3 experiments with phenothiazine against nematodes in sheep: (i) 3 monthly doses of 10 g. each of tablet phenothiazine given to 35 lambs (21 controls) had no effect on weights or on stomach worm counts; (ii) 3 monthly doses of 50 c.c. " Phenovis " (=20 g. phenothiazine) given to 10 ewes with chabertiosis (10 controls) led to an increase in weight and improvement in appearance of the treated ewes: one ewe from each group yielded at post-mortem respectively 17 and 593 Chabertia; (iii) 2 ewes with chabertiosis, and *in extremis*, given 2 monthly doses of 30 g. phenothiazine in liquid form, showed a remarkable increase in weight and reduction in egg-counts. The author prefers liquid given with a drenching gun (230-250 sheep per hour) to tablets given with a balling gun (150-170 sheep per hour). B.G.P.

(45b) From investigations based on 210 lambs at 3 centres in North Wales, Rowlands & Harbour found that at one centre " pining " could be largely cured by the use of phenothiazine, at a second by the use of a trace-elements mixture, and at the third by either of these methods. Thus "pining " may cover conditions due to more than one cause. The results are said to be " of statistical significance " [but the statistical methods are not described or even mentioned]. B.G.P.

(45c) Stewart & Crofton describe 2 experiments comparing the anthelmintic efficacy of phenothiazine and copper/nicotine sulphates, as judged by host-weights, worm-counts and egg-counts. (i) Monthly doses of 15 g. phenothiazine in capsules gave higher weight increases, greatly reduced the counts of stomach worms, but had no effect on small-intestinal worms or on Trichuris. (ii) Repeated doses of 20 g. phenothiazine gave higher weight increases than either copper/nicotine sulphates or a combination of both treatments. The copper/nicotine sulphates reduced the counts of Nematodirus and Moniezia eggs considerably whereas phenothiazine did not; on the other hand, eggs of other nematodes were reduced far more by phenothiazine than by the sulphates. It is interesting that the combination of sulphates and phenothiazine was less effective than the latter alone. B.G.P.

(45d) Boddie & co-workers describe an experiment to compare the efficacy of phenothiazine with that of copper and nicotine sulphates against helminths in 81 young lambs. Three monthly doses of liquid phenothiazine at 0·3 g. per lb. body weight gave better general condition, higher weight-increases and lower egg-counts than did the sulphates. Neither treatment was effective against Nematodirus. B.G.P.